

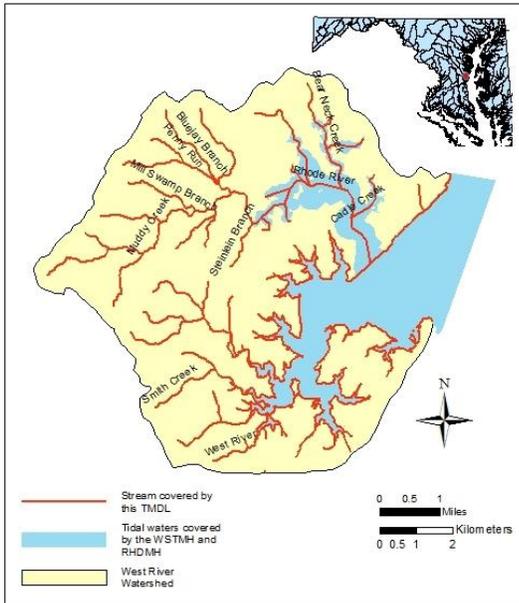


# TMDL for Sediment in the Non-Tidal West River

## What You Need to Know

### Background

The [Total Maximum Daily Load, or TMDL, for sediment in the West River watershed](#) establishes an annual load limit for total suspended solids (TSS) to the non-tidal streams within the watershed. A separate sediment TMDL, for the tidal West River Mesohaline and Rhode River Mesohaline, was established as part the Chesapeake Bay TMDLs in 2010.



The [West River watershed](#), as defined by the State of Maryland, is located on the lower western shore of Maryland in Anne Arundel County. The West River watershed is comprised of two major tributaries, the West and Rhode Rivers. The watershed is located within the Coastal Plain eco-region.



Impaired aquatic life and wildlife in the watershed was first identified in 2002 based on results from the Maryland

Biological Stream Survey (MBSS), a randomized survey of stream health. As part of the MBSS, streams are scored against reference watersheds where habitat and aquatic diversity is high, using two biological indices: the Benthic Index of Biotic Integrity (BIBI) which looks at the biological community in the bottom sediments, and the Fish Index of Biotic Integrity (FIBI).

<b>Watershed ID</b>	<b>Maryland 8-Digit: 02131004</b>
<b>Watershed size</b>	16,300 acres not including wetlands/water
<b>Waterbody type</b>	1 <sup>st</sup> - through 4 <sup>th</sup> -order non-tidal streams
<b>Waterbody designated use not being met</b>	Aquatic life and wildlife
<b>Reason for impairment</b>	Stream biology impacted by excessive sediment
<b>TMDL Baseline year</b>	2009
<b>Overall sediment reduction percent</b>	12%
<b>Related Chesapeake Bay Segment</b>	West River Mesohaline (WSTMH) and Rhode River Mesohaline (RHDMH)

A biological stressor identification (BSID) analysis was conducted in 2012 to identify possible causes of the stream degradation. Using MBSS data, [the BSID](#) showed sediment indicators, instream habitat, and water chemistry pollutants as potential causes. Based on this assessment, the West River watershed was listed as impaired for sediment, as well as channelization on [Maryland’s 2012 Integrated Report of Surface Water Quality](#). The [non-tidal sediment TMDL](#) was approved on April 24, 2019.

## TMDL

The TMDL for sediment in the West River watershed, was established at a level to ensure acceptable biological integrity in the watershed’s streams.

The TMDL was developed with a reference watershed approach using loading results from the Phase 5.3.2 Chesapeake Bay Watershed Model. Annual sediment loads

from reference watersheds—those with good biological integrity—were compared to predicted loads under a modeled all forest scenario to establish an acceptable ratio of current loadings to loadings in a natural condition. This ratio, known as the forest normalized load (FNL), was also calculated for the West River watershed, and the TMDL was established based on the reduction needed to achieve the reference FNL.

## Allocations

Allocations to point sources such as wastewater treatment plants and regulated stormwater, are called Wasteload Allocations (WLAs), and allocations to nonpoint sources, like cropland, are called Load Allocations (LAs). Sector load reductions in this TMDL were assigned using the controllable load methodology from Maryland's Phase II Watershed Implementation Plan (WIP) for the Chesapeake Bay. This methodology assigns reductions to controllable loads (e.g., agriculture & urban) and gives credit to existing implementation efforts, resulting in different percent reductions for different source categories.

The watershed has no wastewater dischargers with permits regulating the discharge of sediment.

Regulated stormwater sources include two individually permitted Municipal Separate Storm Sewer Systems (MS4s), Anne Arundel and the State Highway Administration, and several entities covered under general permits. The WLAs are described in detail in the TMDL’s [technical memorandum on point sources](#). Regulated stormwater WLAs represent less than 37% of the total TMDL.

The LAs for this TMDL, as presented in the [technical memorandum on nonpoint sources](#), account for the remaining portion of the TMDL and are assigned to unregulated urban, agricultural, and natural source categories.

The Baseline and TMDL equations for the West River watershed, including source categories and allocations are provided in the equation below.

<i>Baseline Equation:</i>	<b>1,017</b>	=	<b>151</b>	+	<b>490</b>	+	<b>376</b>	+	<b>0</b>	<b>TSS tons / year</b>
	Baseline Load		Forest		Agriculture		NPDES Stormwater		Wastewater	
<i>TMDL Equation:</i>	<b>898</b>	=	<b>151</b>	+	<b>445</b>	+	<b>302</b>	+	<b>0</b>	<b>TSS tons / year</b>
	TMDL		Forest LA		Agriculture LA		Stormwater WLA		Wastewater WLA	
<i>Reduction from baseline</i>	12%		0%		9%		20%		0%	

*Note: The loadings in this TMDL are expressed as Edge-of-Stream, or EOS, loads, based on the Phase 5.3.2 Chesapeake Bay Watershed Model*

## Next Steps

Most of the sediment reductions in this TMDL are assigned to urban stormwater sources. Implementation of these reductions will occur in parallel with efforts to fully implement the 2010 Chesapeake Bay TMDLs by 2025. While the endpoints of the TMDLs are different—tidal water quality actions will result in progress toward both goals.

Sediment reductions from agricultural sources are usually achieved by managing runoff and erosion with best management practices (BMPs) such as conservation tillage, and riparian buffers. Statewide programs and regulations that promote agricultural BMPs will reduce sediment loads in the West River watershed. The Chesapeake and Atlantic Coastal Bays Trust Fund, for example, makes funds available for planting cover crops.

For urban stormwater, sediment reductions are typically achieved by addressing water quality and quantity with stormwater BMP retrofits. Retrofits include the modification of existing stormwater ponds, the installation of new structural BMPs, tree planting and stream restoration. Individually permitted MS4 jurisdictions are required to develop plans for implementing the sediment reductions from this TMDL. The BMPs described in these plans may also be used for meeting permit impervious area restoration requirements.

While this TMDL establishes a sediment loading target for the watershed, and sediment load reductions are an important tool for tracking progress, the measure of its successful implementation will be its effect on in-stream biological health. The watershed cannot be classified as meeting water quality standards until it is demonstrated that aquatic life is no longer impaired by sediment.